

SMART TOURISM DEVELOPMENT IN VIET NAM: BENEFITS, OPPORTUNITIES, CHALLENGES AND SOLUTIONS

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ABSTRACT — Viet Nam has seen significant growth in the development of technology. This brings new chances for tourism development. More and more tourist destinations have been depending on smart technology to enrich tourist travel experiences. Indeed, smart technologies have widely been used in the tourism industry not only in the world but also in Viet Nam. Thanks to innovative technologies such as internet, smart phones, and social media, tourists find it convenient to travel around Viet Nam. Lots of tourism enterprises have also taken advantage of smart technologies to create smart tourism products to enhance guests' experience. In this study, the secondary data collection method in qualitative research is employed to analyze the advantages and opportunities of smart tourism. This paper aims to indicate the key benefits of smart tourism, explore some main opportunities, address several major challenges, and suggest possible solutions to develop smart tourism in Viet Nam. Several solutions are proposed for businesses and educational organizations to develop an appropriate curriculum to maximize the use of advanced technology. It is highly recommended that the government should provide financial and technical supports for hospitality and tourism organizations, especially small and medium-sized ones to integrate intelligent technology into their premises as well as provide opportunities for businesses to learn some good smart tourism models from other countries to apply them in Viet Nam.

Keywords – smart tourism, smart technologies, technology integration, technology infrastructure.

I. INTRODUCTION

The tourism industry has been strongly influenced by the 4th industrial revolution. Indeed, technological innovations have greatly impacted on the tourism development. The smart concept is conceptualized as smart tourism for the tourism sector [1]. The rapid change in information and technology has a big influence on it. Werthner and Ricci [2] stated that smart tourism can be defined as a logical progression from traditional tourism and the information and communication technologies that have been adopted in tourism such as global distribution and central reservation systems, the application of Web-based technologies. Actually, all tourism stakeholders including tourists, tourism enterprises, and local authorities need to use different types of technological innovations and practices. Digital technology has been recognized as an important factor for the development of this kind of tourism. Cimbalevic [3] mentioned that the development of information and technology is the core foundation for the creation of intelligent tourism products in order to meet tourists' demands and also enhance tourists' experiences as well as tourism destinations' competitiveness. It is important to develop a smart tourism environment because it is one of the good ways to promote the efficiency and attractiveness of the destinations. Lee, Zach, and Chung [4] said that smart tourism is a holistic method in which information and technology help to improve destination marketing, to manage tourism resources, and to deliver tourist products and services. Today more and more tourists are getting used to modern technology to support their travel journeys. So, tourism businesses should build a friendly technology infrastructure that satisfies the physical and intellectual needs of tourists. By 2025, tourism in Viet Nam is going to earn 305 billion USD in profits thanks to digital technology. The important application tools and technology platforms are also made to promote intelligent tourism which can lead to sustainable development [5]. Technology integration in tourism development is currently popular in many countries in the world. Some countries like France and Spain have used innovation of technology to help holidaymakers feel confident and more enjoyable. Bordeaux in France has implemented "Parking Easy" which supports visitors to look for parking locations by connecting roads with tourist attractions. A convenient bus system is provided for tourists in Paris, France. In Spain the application SmartSantanderRA allows visitors to see the views of cities from past decades and at the same time tourists can watch the current life on the cameras when they are on the beaches [6]. In Viet Nam, the government has priority policies to encourage tourism businesses to make smart tourism products by using advanced information and communication technology. A lot of destinations in Vietnam have implemented digital information and technology into their tourism products. Some digital technologies including big data analytics, mobile applications, and social media have been used in most of the tourism organizations. According to Hay et al [7], these technologies have the potential to revolutionize how tourism organizations manage, communicate and contact with tourists and stakeholders. The purpose of this paper is to state the benefits,

indicate several key opportunities, address challenges, and propose some solutions for the development of smart tourism in Viet Nam.

II. RESEARCH METHOD

Secondary research is one of the popular methods to conduct a study. According to Vartanian [8], secondary research refers to “data that has been previously gathered and is under consideration to be reused for new questions, for which the data gathered was not originally intended”. This study is carried out by using a secondary research method. Data and information are collected from different sources such as websites, articles, published in national and international journals, books, reliable newspapers and magazines in Viet Nam as well as government reports related to tourism. The author’s purposes are to use the collected data and information to explore benefits, address the opportunities, analyze the challenges of smart tourism, and give some recommendations for better implementation of smart tourism in Viet Nam.

III. THE BENEFITS OF SMART TOURISM

The development of smart tourism leads to the formation of a tourism ecosystem in which information and technology play a crucial role. Three main groups benefit from smart tourism development including tourists, tourism businesses, and local communities. It would be good to mention tourists who gain more advantages than the other two first. Research has found that smart tourism technologies have a great impact on travel planning and tourism experience [9]. The use of smart tourism technologies helps to enhance tourists’ travel experiences by saving time in looking up, receiving, and collecting tourism information, saving their costs, and improving the quality of their travel experiences. Furthermore, Goo et al [10] also declared that the Internet is very useful for tourists to make all categories of travel decisions like places to visit, locations to stay, and travel activities to do. Mobile application is another technology innovation to provide tourists with useful platforms during their trips. It assists travelers look for information, comparing prices and services, making a booking, seeing customer reviews, and even co-create value for tourism products and services by scientific sharing, comments, and suggestions. Statistics in Vietnam’s Search for Tomorrow Report show that 83% of customers do research on the products on online channels before they want to buy and 78% of travelers look up for tourism products and services on the internet [7]. Travelers not only can look for basic information of a journey like types of lodging and transportation, but also find more detailed information about other services such as specific amenities or facilities that are suitable for their needs. Besides, social media has been a useful technological tool for tourists’ pre-travel planning, decisions, and purchasing of trips. The survey which was conducted in November 2023 in 13 markets with 2,600 respondents on travel trends demonstrated that social media is a major factor influencing tourists’ travel decisions. 96% of travelers from Asia-Pacific regions claimed that they use social media platforms to find information, make plans, and share their travel itineraries [11]. More and more people believe in online travel recommendations. More than 80% of travelers in Asia-Pacific regions and 91% of Vietnamese travelers make a travel booking depending on recommendations and reviews from content creators. Vietnamese favorite format is video due to its strong visual appeal [11]. It is a Vietnamese behavior of using social media to post photos and information about their travels and share with their friends, families, and other people online. In addition, tourists would be more satisfied because they feel safer when they use smart tourist apps and services to get useful information to counter their worries. Last but not least, public websites and company websites are good information sources for travelers to search for information and contact directly with service providers to plan their trip well in advance.

The second group that enjoys the benefits of smart tourism development is tourism businesses. Technology platform assists tourism business organizations to easily approach their customers as well as raise the quality of tourists’ experiences. This will help tourism service providers improve their competitiveness. Information-sharing platforms are one of the main technological advancements that help businesses to reach their current and potential international and domestic customers. The growth of social media, QR codes, and mini-programs are effective digital tools to provide information before, during, and after the holidaymakers’ visit. Also, these online platforms have been increasingly used as a more efficient promotional and marketing strategy. Complex algorithms, cookies, and other digital monitoring methods are proven to be an effective way for tourism enterprises to stay in touch with their current customers as well as potential ones. This enables them to have more suitable and targeted products. China is one of the leading countries in the world to successfully utilize smart tourism information-sharing practices. QR codes and social media sharing platforms such as WeChat have been widely used in most of the Chinese tourism attractions [12]. In addition, Diaikos, Katsaros, Mehra, Pallis, and Vakaliloud mentioned that cloud services are made to have a convenient access to data, software, and applications through web browsers [13]. Tour guide systems can serve a large number of travelers without being installed on any personal device. A centralized distribution system can serve any travel agents on a pay-per-use basis [13]. Besides, the Internet of Things (IoT) is one of the greatest technologies that people have ever

created for tourism businesses. It refers to “the pervasive presence around us of a variety of things or objects—such as Radio-Frequency Identification (RFID) tags, sensors, actuators, mobile phones, etc.—which, through unique addressing schemes, are able to interact with each other and cooperate with their neighbors to reach common goals” [14]. The IOT system helps tourism enterprises for collecting and analyzing information as well as for automation and control [15]. The IoT has been used in China Sanya City to manage tourism scenic attractions. FRID reader chips are embedded in the entrance tickets to track down tourists’ locations and to implement present-based advertising and payments [16]. The system also helps to manage the number of people visiting the heritage sites in Sanya. Different sensors have been used to monitor the carrying capacity of heritage sites to control air quality, crowdedness, and electricity consumption [17]. The monitoring system is automatically connected with the ticketing system to implement pricing strategies that would affect visitor numbers. Furthermore, many tourism providers have been adopting innovative technological strategies to broaden tourism experience. This ranges from augmented reality applications to gaming and virtual reality. In England, the hotel rooms in the Hub Hotel from Premier Inn have augmented reality compatible with the wall maps which supply some more information about popular local tourist attractions when being viewed through a smart device [18].

The last one worth introducing the advantage of developing intelligent tourism is local communities that can be acted as suppliers by using various types of information and communication technology applications [7]. The growth of smart tourism can result in economic and social-cultural benefits for the locality during the process of serving and communicating with international and domestic travelers. The integration of technology into destinations’ physical infrastructure is important to enhance the tourist experience. Baggio and Chiappa stress that smart tourism provides an opportunity for the local community to employ technological infrastructures to create a digital environment in which tourist experiences can be improved [19]. Barcelona has interactive bus shelters for tourists who can get access to tourist information, bus arrival times and can charge their mobile phones by using USB ports at the shelters. Also, bicycles are available throughout the city so vacationists are able to check bicycle locations by a smartphone app. “Brisbane has recently mounted over 100 beacons onto points of interest to communicate information to holidaymakers via a mobile app if they are within a certain radius of the location”. In Amsterdam, beacons are used to translate tourist signs into many different kinds of languages to help international visitors to find their way. In Seoul, free wifi and smartphones are provided to vacationists while tourist bus shuttles offer location-based information for travelers in Taiwan [12]. Local communities of these places invest in technology to foster innovation and enhance tourist experience which in turn helps to boost sales and profits.

IV. OPPORTUNITIES FOR SMART TOURISM DEVELOPMENT IN VIET NAM

Firstly, Viet Nam whose high-speed internet access has been increasing is ranked among the countries with the fastest connectivity. This S-shaped country is likely to have opportunities to develop intelligent tourism. By mid-June 2021, the 6th generation internet protocol has been used in 44 provinces and cities, accounting for around 70% of localities in the country. IPv6 is the default protocol in 5G networks and the Internet of Things. It is a digital technology that supports the development of internet, infrastructure, and digital services. Since March 2021, Vietnam which currently has 34 million IPv6 users is in the second place of IPv6 transition in ASEAN regions, 4th place in Asia, and 10th place in worldwide. This helps domestic and international connection speed eventually improve. IPv6 provides a strong and fast internet connection with the global information society [20]. Strong internet with large connection coverage helps to boost tourist experience, especially foreign ones. 90% of the foreign visitors to Viet Nam access tourist information via the internet [21]. Indeed, both domestic and international travelers find it convenient to travel because they can easily get access to the internet to search for necessary travel information. The statistics from the market research company Nielsen show that 88% of Vietnamese visitors have looked for information on internet and 35% of them make plans for their trips by using information on the World Wide Web [22]. According to Viet Nam’s National Digital Transformation Program, Viet Nam is going to concentrate on upgrading internet infrastructure and platforms in order to expand more internet coverage around Viet Nam and overseas. Fiber optic cables under the sea will be developed to make Viet Nam become one of the connectivity hubs in the area [20].

Secondly, the number of smartphone users is more and more increasing in the world in general and in Viet Nam in particular. Approximately 94.2 million people use smartphones in Viet Nam and 82.2 million people subscribe to mobile broadband, which reaches 74.3% of the whole population [23]. Almost 6.4 million people have smartphone mobile network subscriptions in the world and the number is predicted to increase to more than 7.7 billion by 2028. China and the United States have the highest number of smartphone mobile network subscriptions [24]. The number of tourists traveling to Viet Nam from China and America is increasing, which offer an opportunity for the expansion of smart tourism in Viet Nam. According to Phong [25], China has been the second largest source of tourist arrivals with 1.1 million and America is the fourth biggest tourist sender

country with 548.000. Smartphones have been recognized as the most effective tool to develop smart tourism because they play a critical role not only for the competitiveness of tourism organizations but also for the experience of tourists. Travel technology platform Egencia stated that 74% of tourists use smartphones to do research on their travel choices in 2021 [5]. Danny and Rebecca from Britain, visited Viet Nam for their first time, drinking beer and eating pork rolls in the heart of Old Quarter in Ha Noi, said that their smartphones helped them to find this restaurant and a list of interesting activities they expected to experience during the time they were in Ha Noi[6]. Similarly, there are lots of international tourists using smartphones to book taxis, accommodations, and other services. They also set plans for their trip by using online travel agencies and other applications on smart devices [6]. It is an inevitable trend for tourists to use smartphone smart devices during their trips.

Thirdly, the government set favorable policies to develop smart tourism. Many legal documents have been issued to integrate information and communication technology into socioeconomic development and tourism development. According to the Institute for Tourism Development Research, Directive No. 16/CT-TTg dated 4/5/2017 issued by the Prime Minister, the development of a digital conversion strategy and the integration of information and communication technology are prioritized to promote smart tourism in Vietnam. This policy direction is important for the tourism sector to reach objectives set by Resolution No. 08-NQ/TW on tourism becoming one of the leading economic activities [26]. The resolution also indicates that tourism promotion, tourism resource training, and tourism destination management are the main factors for integrating information and technology into tourism activities [26]. Decision No. 1671/QĐ-TTg of the Prime Minister dated November 30, 2018 states that the integration of information technology is a necessity and an effective solution to support and attract tourists, enhance destination competitiveness, and make a great contribution to the development of the tourism industry with the purpose of becoming the leading economic sector of the nation [7]. It is very vital for all of the stakeholders to join in the development of a smart tourism ecosystem. In addition, the State is committed to having favorable mechanisms that allow businesses, organizations, and individuals to make contributions, share and exploit popular information systems, and databases, and integrate information technology to grow tourism [7]. The Resolution of the 13th National Party Congress declared that developing infrastructure for information and telecommunications to become a digital economy is one of three strategic breakthroughs [27]. “To realize the Resolution, the Prime Minister approved Project 06, a database project on population, personal identification, and electronic authentication to serve national digital transformation from 2022 to 2025, with a vision to 2030” [27]. An overall plan for IT integration in the tourism industry has been approved with the aim of connecting various stakeholders to develop a smart tourism ecosystem. There are directions in the tourism development strategy up to 2030 for fostering the sector’s digital transformation and developing a smart tourism ecosystem [28].

Last but not least, more and more tourism enterprises and tourism organizations join in the digital transformation process by cooperating with technology organizations to produce friendly tourism technological products to suit the intellectual and physical needs of customers. The application of technology helps tourism businesses to save cost, time, and staff and at the same time, it still boosts revenue for the businesses. Nowadays, many tourism businesses have been actively researching and applying technology to their business activities to create new and great values for customers. Some tourism organizations in Viet Nam are successful in implementing the application of technology into their business activities in order to improve customer experience. In Ha Noi, the e-ticket system was officially launched since May 2022 in the Temple of Literature. The operational management model has been changed to have a more convenient and effective tourism experience for holidaymakers. The electronic ticketing system has different self-check-in choices for tourists. This is the cooperation program among the Centre of Science and Culture Activities of the Temple of Literature – Quoc Tu Giam (Ha Noi), the Tourism Information Technology Center (TITC) (under Vietnam National Administration of Tourism - VNAT), and VIETSENS Technology Group [28]. This technology helps businesses avoid some of the main problems such as printing costs, waste pollution, and long queues at the purchasing counter. As a result, it improves efficiency by creating a user-friendly and seamless experience for vacationists. Da Nang successfully implements “Da Nang Fantastivity” chatbot application which is the first of its kind in Viet Nam and Southeast Asia [29] and Ho Chi Minh offers the City Tour Hop on-Hop off double-decker bus service which combines digital data on transportation and visitor interests to make suitable tour routes, purchase tickets and make payment virtually, have free wifi and automatic multilingual translation [29]. Automatic interpretation systems and information websites about destinations have been successfully used in the Van Mieu Quoc Tu Giam relic site, Thang Long Imperial Citadel, Hoa Lo Prison, and Bat Trang Ceramic Village. A 3D library has been introduced in the Center for Cultural and Scientific Activities Van Mieu-Quoc Tu Giam, enabling visitors to different kinds of languages to look up information. A Tourist map of the capital in digital form has been made by Ha Noi Department of Tourism to assist globetrotters to search for destinations [30]. For convenient and effective management, a customer management system has been used in PYS Travel.

This technology saves all of the information about marketing, sales, and customer care. The entire staff in the company easily gets access to this system to understand customer's interests and habits. Leaders also find this system useful since it can update a tour's status and customers' preferences in every attraction monthly and help them develop a detailed business plan [6].

VI. THE CHALLENGES OF SMART TOURISM DEVELOPMENT

One of the first challenges of intelligent tourism development that should be touched on here is a lack of financial resources. Technology development conditions of each region in Viet Nam are different due to different economic development, which causes the application of information and technology to take place unevenly and inconsistently [31]. Only leading businesses such as four or five-star hotels, fine dining restaurants, luxury shopping centers, and high-class entertainment areas located in large provinces or cities are capable of affording access to high technologies. However, the majority of tourism businesses including 1,2,3-star accommodations, casual dining, casual shopping malls, and other tourism vendors in Vietnam are small and medium-sized, so they are short of finance to invest in modern technologies. The government has legal documents supporting the integration of information and communication technology, but there are no policies on financial support for tourism enterprises, especially small and medium-sized ones.

Another big challenge is the shortage of qualified smart tourism human resources. Dr. Le Thi Ai Nhan [32], a social science expert, stated that good employees, especially competent ones in information technology play a decisive role in the process of digital transformation and smart tourism development. Nevertheless, the current training system is unable to catch up with the trend of talent incubation and human resources development in smart tourism. It is reported that 58% of human resources are trained unofficially. Tourism and hospitality schools are unable to provide enough workforce for the industry, accounting for only 60 percent of the sector's demand [33]. A high-quality tourism workforce that has a significant impact on the overall service quality of the industry can be seen mainly in large tourist cities. Indeed, it is difficult to find digital employees with sufficient knowledge and skills working in most restaurants, hotels, travel agents, travel shops, and tourist sites across the country. This hinders the development of tourism in general and intelligent tourism in particular. One of the key reasons is that the current tourism education curriculum places the least emphasis on teaching and learning digital technology. Actually, training education organizations and tourism businesses fail to work closely with each other to design an effective curriculum. Most of the students from training organizations prove to have wholly inadequate skills and knowledge required by the businesses. According to a survey conducted in Ho Chi Minh City, 500 companies mentioned that approximately 94% of new graduates have to be re-trained after they are recruited. This makes businesses pay higher costs for training again [34]. Higher education training schools in Viet Nam are unable to meet the requirements of labour market. Nguyen (2018) also specified that students after graduation in Viet Nam are deficient in practical skills and knowledge required by businesses [35]. The last one is that many tourist destinations in Viet Nam are reluctant to use technology integration. A summary report on the level of willingness for information technology development and application from the Ministry of Information and Communications shows that Da Nang, Quang Ninh, Thua Thien Hue, Bac Giang, and Lao Cai led the overall report ranking in the nation in 2022. However, many other places known as large tourist areas have low or very low ranking index. Ho Chi Minh City was ranked 18, Binh Thuan (33), Hanoi (45), Khanh Hoa (38), Quang Binh (44), Lam Dong (54)[36]. The development of smart tourism is based on the foundation of applying information and communication technology. Nevertheless, the low level of promptness for the application of information and technology can be seen in big cities such as Ho Chi Minh City, Ha Noi, and Lam Dong. This is a big challenge that hinders smart tourism development. One of the main reasons is that there are currently many legal documents promoting the application of information and communication technology communication with socio-economic development in general and tourism development in particular, but up to now it seems that no specific documents regulating or guiding the implementation of smart tourism development are found in Vietnam. Furthermore, the smart tourism model is still limited and new. No locality has yet built a successful intelligent tourism model to serve as a learning one for other localities [37]. Although some Vietnamese businesses in big areas apply smart tourism technology, most of the Vietnamese tourism businesses still follow many traditional trends.

VII. RECOMMENDATIONS

The first recommendation would be that close cooperation and connection between higher education institutions and tourism enterprises is needed to develop a suitable curriculum, which can produce high-quality human resource for smart tourism. The interaction and cooperation should lead to mutual benefits for both sides. Education organizations and businesses need to work closely with each other by sharing and transferring the knowledge, skills, and technology necessary for the digital tourism development.

Another suggestion worth bringing up here is that the government should have policies on financial and technical support for tourism businesses, especially the small and medium-size domestic ones in big and small

tourist places so that the majority of businesses can invest in information and communications technology infrastructure in the field of tourism. Creating a favorable environment is necessary to encourage tourism enterprises to participate in smart tourism development. The tourism businesses would be more willing to apply technology to their business activities when they can afford to purchase the products and know how to use them properly.

The last proposal for upgrading intelligent tourism is to learn from international countries, which successfully developed smart tourism with a good model of smart tourism, adjust the model to suit the current infrastructure, financial capacity, and human resource skills, and apply the model in some of big tourist areas in Viet Nam first. Ho Chi Minh City, Da Nang, and Ha Noi, the three biggest tourist destinations, could be the first three pilot places. The results of some of these pilot models will be valuable lessons for the tourism industry and other localities to learn and then develop the best model for each region.

V. CONCLUSION

Smart technology has played a big part in enhancing tourist' experience during their travel and improving the competitiveness of tourism enterprises. The development of smart tourism is an inevitable trend in the technological era. It is very important to use information and communication systems to build a smart tourism system that can lead to a high-quality tourism industry to serve tourists and make a great contribution to sustainable economic development. The paper explains the concept of smart tourism which mainly exploits smart technology in business activities to create memorable experiences for tourists and bring economic benefits for tourism organizations. Some major benefits for tourists, business enterprises, and local communities are also addressed in the paper. Besides indicating some current opportunities for smart tourism development, there are certain difficulties in expanding smart tourism. Some of the solutions are also proposed to help expand smart tourism in the future in Vietnam.

VI. REFERENCES

- [1] Buhalis D (2003), *ETourism: Information Technology for Strategic Tourism Management*, Financial Times Hall, London, 365p.
- [2] Werthner H., F. Ricci (2004), E-Commerce and Tourism, *Communications of the ACM*, vol. 47, no. 12, pp.101-105.
- [3] Cimbalević M., U. Stankov, V. Pavluković (2018), Going beyond the traditional Destination competitiveness reflections on a smart destination in the current research, *Current Issues in Tourism*, vol. 22, no. 20, pp. 2472-2477.
- [4] Lee P., F.J. Zach, N. Chung (2021), Progress in smart tourism 2010-2017: A systematic literature review, *Journal of Smart Tourism*, vol. 1, no. 1, pp. 19-30.
- [5] H. An (2024), Digital transformation, smart tourism helps Vietnam's smokeless industry making breakthrough, <https://en.baoquocte.vn/digital-transformation-smart-tourism-help-vietnams-smokeless-industry-making-breakthrough-254570.html>, Accessed date February 12, 2024
- [6] Anonymous (2017), Smart tourism: A future trend of tourism, <https://vietnamnet.vn/en/smart-tourism-a-future-trend-of-tourism-E189815.html>, Accessed date February 12, 2024
- [7] Giang V. H (2021), Developing Smart Tourism in Vietnam: Opportunities and Threat, *Science Journal of Noi Open University*, vol. 16, no. 82, pp. 8-15.
- [8] Vartanian T.P (2010), *Secondary data analysis*, Oxford University Press, USA, 224p.
- [9] Koo C., U. Gretzel, L. Zhong (2016), Application of smart tourism to cities, *International Journal of Tourism Cities*, Emerald Group Publishing Limited , vol. 2, no. 2.
- [10] Goo J., D. Huang, C. Yoo, C. Koo (2022), Smart Tourism Technologies' Ambidexterity: Balancing Tourist's Worries and Novelty Seeking for Travel Satisfaction, *Information Systems Frontiers*, Springer, vol. 24, no. 24, pp. 2139-2158.
- [11] M. Hoa (2024), Social Media Is A Common Source of Travel Information for Vietnamese Travellers, <http://en.doanhnghiephoinhap.vn/social-media-is-a-common-source-of-travel-information-for-vietnamese-travelers.html>, Accessed date February 12, 2024.
- [12] Gretzel U., M. Sigala, Z. Xiang, C. Koo (2015), Smart tourism: foundations and developments, *Electron Markets*, vol. 25, no. 3, pp. 179-188.
- [13] Katsaros D., P. Mehra, G. Pallis, M. D. Dikaiakos, A. Vakali (2009), Cloud Computing Distributed Internet Computing for IT and Scientific Research, *IEEE Internet Computing*, vol. 3, no. 5, pp. 10-13.
- [14] Atzori L., A. Iera, G. Morabi (2010), The internet of things: A survey. *Computer Networks*, vol. 54, no. 15, pp.2787-2805.
- [15] Chui M., M. Löffler, R. Roberts (2010), The internet of things. *McKinsey Quarterly*, no. 2, pp. 1-9.

- [16] Lin Y. The application of the internet of things in Hainan tourism scenic Spot, *Seventh International Conference on Computational Intelligence and Security*, December 3-4, 2011, IEEE, pp. 1549–1553.
- [17] Mingjun W., Y. Zhen, Z. Wei, D. Xishang, Y. Xiaofei, S. Chenggang, L. Xuhong, W. Fang, H. Jinghai (2012), A research on experimental system for Internet of Things major and application project, *3rd International Conference on System Science, Engineering Design and Manufacturing Informatization*, October 20-21, IEEE, pp. 261-263.
- [18] Anonymous (2023), What is smart tourism and why is it so BIG?, <http://tourismteacher.com/smart-Tourism>, February 13, 2024
- [19] Gelter J., M. Fuchs, M. Lexhagen (2022), Making sense of smart tourism destinations: A qualitative text analysis from Sweden, *Journal of Marketing Destination and Management*, vol. 23.
- [20] K. Phuong (2022), Viet Nam has over 72 million Internet users, <http://en.baohinhphu.vn/viet-nam-has-over-72-million-internet-users-111221207165529325>, Accessed date February 13, 2024
- [21] M. Phuong (2018), Vietnam tourism faces challenges from the 4th industrial revolution, <http://vovworld.vn/en-US/current-affairs/vietnam-tourism-faces-challenges-from-the-4th-industrial-revolution-623670.vov>, Accessed date February 13, 2024
- [22] Anonymous (2022), Internet - an important element of digital transformation in Việt Nam, <http://en.vietnameplus.vn/internet-important-element-of-digital-transformation-in-vietnam-post-245925>, Accessed date February 13, 2024
- [23] Anonymous (2024), Number of smartphone mobile network subscriptions worldwide from 2016 to 2022, With forecasts from 2023 to 2028, <http://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide>, Accessed date February 13, 2024
- [24] H. Phong (2023), Vietnam achieves 2023 foreign tourist target, <https://e.vnexpress.net/news/travel/vietnam-achieves-2023-foreign-tourist-target-4658834.html>, Accessed date February 13, 2024
- [25] H. Thai (2017), Smart tourism - Opportunities and challenges for Vietnam Tourism, <http://itdr.org.vn/en/tin-tuc-chung-en/smart-tourism-opportunities-and-challenges-for-vietnam-tourism>, Accessed date February 13, 2024
- [26] V. Cường, T. Hoa (2023), Digital transformation - important premise to realize Party resolution, <http://vovworld.vn/en-US/current-affairs/digital-transformation-important-premise-to-realize-party-resolution-1220360.vov>, Accessed date February 13, 2024
- [27] Anonymous (2023), Tourism works to adapt and leverage digital technology, <http://en.vietnamplus.vn/tourism-works-to-adapt-and-leverage-digital-technology/269951.vnp>, Accessed date February 14, 2024
- [28] Anonymous (2022), Visitors highly praise the e-ticket system at the Temple of Literature - Quoc Tu Giam (Ha Noi), <http://vietnamtourism.gov.vn/en/post/17322>, Accessed date February 14, 2024
- [29] H. Oanh (2021), Smart tourism models open digital doors, <http://vir.com.vn/smart-Tourism-models-open-digital-doors-90026.html>, Accessed date February 14, 2024
- [30] Anonymous (2024), Digital transformation of the tourism industry - An inevitable trend in the current Context, <http://vietnamnews.vn/life-style/1171658/digital-transformation-inevitable-tourims-trend.html>, Accessed date February 14, 2024
- [31] Anonymous (2022), Challenges remain in tourism's digital transformation, <http://vietnamnews.vn/society/1157474/challenges-remain-in-tourism-s-digital-transformation.html>, Accessed date February 14, 2024
- [32] K. Das (2019), Vietnam's Tourism Industry Continues its Growth in 2018, <http://www.vietnam-briefing.com/news/vietnams-tourism-industry-continues-growth-2018.html>, Accessed date February 14, 2024.
- [33] Linh P.T.T, L. Q. Thanh (2022), Industry Links for Higher Education in Vietnam: Discussion for Solutions, *TNU Journal of Science and Technology*, vol. 227, no. 04, pp. 76 – 83.
- [34] Nguyen M. D (2018), Building a skill training and self-training model for Vietnamese students to meet enterprises' demands, *VNU Journal of Science: Economics and Business*, vol. 34, no. 1, pp. 42-50.
- [35] Department of Information Technology and Communication Industry - Ministry of Information and Communication and Vietnam Informatics Association (2023), *Báo cáo chỉ số sẵn sàng cho phát triển và ứng dụng công nghệ thông tin và truyền thông Việt Nam năm 2022*, Ministry of Information and Communication, Ha Noi, 139p.
- [36] Hanh P. T., N.T. Nam (2022), Developing Smart Tourism in Vietnam: Opportunities and Challenges, *Science Journal of Ha Noi University*, no. 58, pp. 71-88.

PHÁT TRIỂN DU LỊCH THÔNG MINH TẠI VIỆT NAM: LỢI ÍCH, CƠ HỘI, THÁCH THỨC VÀ GIẢI PHÁP

Kiều Thủy Tiên

TÓM TẮT—Việt Nam đã chứng kiến sự tăng trưởng đáng kể trong phát triển công nghệ. Điều này mang đến những cơ hội mới cho phát triển du lịch. Ngày càng có nhiều địa điểm du lịch phụ thuộc vào công nghệ thông minh để làm phong phú thêm trải nghiệm du lịch. Quả thực, công nghệ thông minh đã được ứng dụng rộng rãi trong ngành du lịch không chỉ trên thế giới mà còn ở Việt Nam. Nhờ các công nghệ tiên tiến như internet, điện thoại thông minh và phương tiện truyền thông xã hội, khách du lịch cảm thấy thuận tiện khi đi du lịch khắp Việt Nam. Nhiều doanh nghiệp du lịch cũng đã tận dụng công nghệ thông minh để tạo ra các sản phẩm du lịch thông minh nhằm nâng cao trải nghiệm của du khách. Trong nghiên cứu này, phương pháp thu thập dữ liệu thứ cấp trong nghiên cứu định tính được sử dụng để phân tích những lợi thế, cơ hội của du lịch thông minh. Bài viết này nhằm mục đích chỉ ra những lợi ích chính của du lịch thông minh, khám phá một số cơ hội chính, giải quyết một số thách thức lớn và đề xuất các giải pháp khả thi để phát triển du lịch thông minh ở Việt Nam. Một số giải pháp được đề xuất để các doanh nghiệp, tổ chức giáo dục xây dựng chương trình giảng dạy phù hợp nhằm tận dụng tối đa công nghệ tiên tiến. Chính phủ nên hỗ trợ tài chính và kỹ thuật cho các tổ chức khách sạn và du lịch, đặc biệt là các tổ chức vừa và nhỏ để sử dụng công nghệ thông minh vào cơ sở của họ cũng như tạo cơ hội cho các doanh nghiệp học hỏi một số mô hình du lịch thông minh tốt từ các nước khác trên thế giới đang sử dụng thành công việc áp dụng công nghệ để phát triển du lịch.

Từ khóa – du lịch thông minh, công nghệ thông minh, tích hợp công nghệ, cơ sở hạ tầng công nghệ



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